

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

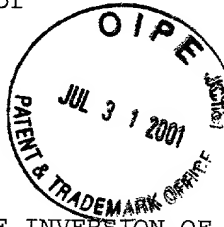
Atty. Docket No: 065691/0219

In re patent application of

CHAMBON, PIERRE et al.

Serial No. 09/843,150

Filed: April 30, 2001



For: METHOD FOR THE STABLE INVERSION OF DNA SEQUENCE BY SITE-SPECIFIC  
RECOMBINATION AND DNA VECTORS AND TRANSGENIC CELLS THEREOF

STATEMENT TO SUPPORT FILING AND SUBMISSION IN  
ACCORDANCE WITH 37 C.F.R. §§ 1.821-1.825

Assistant Commissioner for Patents  
Washington, D.C. 20231  
**Box SEQUENCE**

Sir:

In connection with a Sequence Listing submitted concurrently  
herewith, the undersigned hereby states that:

1. the submission, filed herewith in accordance with 37  
C.F.R. § 1.821(g), does not include new matter;

2. the content of the attached paper copy and the  
attached computer readable copy of the Sequence Listing, submitted in  
accordance with 37 C.F.R. § 1.821(c) and (e), respectively, are the same;  
and

3. all statements made herein of their own knowledge are  
true and that all statements made on information and belief are believed to  
be true; and further, that these statements were made with the knowledge  
that willful false statements and the like so made are punishable by fine  
or imprisonment, or both, under Section 1001 of Title 18 of the United

~~Date~~

Intellectual Property Services  
1500A Lafayette Road  
Suite 262  
Portsmouth, N.H.  
800-318-3021

~~James~~ A. Coburn



# SEQUENCE LISTING

<110> CHAMBON, PIERRE  
GHYSELINCK, NORBERT B.  
SCHNUTGEN, FRANK

<120> METHOD FOR THE STABLE INVERSION OF DNA SEQUENCE BY  
SITE-SPECIFIC RECOMBINATION AND DNA VECTORS AND  
TRANSGENIC CELLS THEREOF

<130> 065691/0219

<140> 09/843,150

<141> 2001-04-30

<160> 56

&lt;170&gt; PatentIn Ver. 2.1

 $\langle 210 \rangle$  1

<211> 60

<212> DNA

<213> Artificial sequence

<220>

<223> Description of Artificial sequence: R1  
synthetic oligonucleotide

 $\langle 400 \rangle$  1

aattgataac ttcgtatagc atacattata cgaagttatc caagcttcac catcgacccg 60

 $\langle 210 \rangle$  2

<211> 60

<212> DNA

<213> Artificial sequence

<220>

<223> Description of Artificial sequence: R2  
synthetic oligonucleotide

<400> 2

aattcgggtc gatggtgaag cttggataac ttcgtataat gtatgctata cgaagttatc 60

<210> 3

<211> 61

<212> DNA

<213> Artificial sequence

<220>

<223> Description of Artificial sequence: R3  
synthetic oligonucleotide

<400> 3

aattgccaag catcaccatc gacccataac ttcgtatagt atacattata cgaagttatc 60  
g 61

61

<210> 4  
 <211> 61  
 <212> DNA  
 <213> Artificial sequence

<220>  
 <223> Description of Artificial sequence: R4  
 synthetic oligonucleotide

<400> 4  
 aattcgataa cttcgtataa tgtatactat acgaagttat gggtcgatgg tgatgcttgg 60  
 c 61

<210> 5  
 <211> 67  
 <212> DNA  
 <213> Artificial sequence

<220>  
 <223> Description of Artificial sequence: R5  
 synthetic oligonucleotide

<400> 5  
 ctagtggatc cgataacttc gtataatgta tgctatacga agttatccaa gcatcaccat 60  
 cgaccct 67

<210> 6  
 <211> 67  
 <212> DNA  
 <213> Artificial sequence

<220>  
 <223> Description of Artificial sequence: R6  
 synthetic oligonucleotide

<400> 6  
 ctagagggtc gatgggtgatg cttggataac ttcgtatagc atacattata cgaagttatc 60  
 ggatcca 67

<210> 7  
 <211> 60  
 <212> DNA  
 <213> Artificial sequence

<220>  
 <223> Description of Artificial sequence: R7  
 synthetic oligonucleotide

<400> 7  
 ctagtccaga tctcaccatc gaccataac ttcgtataat gtatactata cgaagttatt 60

<210> 8  
 <211> 60

03440003440

<212> DNA  
 <213> Artificial sequence

<220>  
 <223> Description of Artificial sequence: R8  
 synthetic oligonucleotide

<400> 8  
 ctagaataac ttcgtatagt atacattata cgaagttatg ggtc gatggt gagatctgga 60

<210> 9  
 <211> 28  
 <212> DNA  
 <213> Artificial sequence

<220>  
 <223> Description of Artificial sequence: R9  
 synthetic oligonucleotide

<400> 9  
 ggggaattct tctgtacag ctcgtcca 28

<210> 10  
 <211> 32  
 <212> DNA  
 <213> Artificial sequence

<220>  
 <223> Description of Artificial sequence: R10  
 synthetic oligonucleotide

<400> 10  
 ggggaattcc catggtgagc aagggcgagg ag 32

<210> 11  
 <211> 46  
 <212> DNA  
 <213> Artificial sequence

<220>  
 <223> Description of Artificial sequence: R11  
 synthetic oligonucleotide

<400> 11  
 ctatcagggc gatggccac tacgtgttct gaggcggaaa gaacca 46

<210> 12  
 <211> 47  
 <212> DNA  
 <213> Artificial sequence

<220>  
 <223> Description of Artificial sequence: R12  
 synthetic oligonucleotide

101400544350

<400> 12  
 ggaatagctc agaggccgag gcggcctcgg cctctgcata aataaaa 47

<210> 13  
 <211> 20  
 <212> DNA  
 <213> Artificial sequence

<220>  
 <223> Description of Artificial sequence: Synthetic  
 oligonucleotide

<400> 13  
 gtgcatctgc cagtttgagg 20

<210> 14  
 <211> 17  
 <212> DNA  
 <213> Artificial sequence

<220>  
 <223> Description of Artificial sequence: Synthetic  
 oligonucleotide

<400> 14  
 aatacgactc actatag 17

<210> 15  
 <211> 40  
 <212> DNA  
 <213> Artificial sequence

<220>  
 <223> Description of Artificial sequence: G1  
 synthetic oligonucleotide

<400> 15  
 ggccgcataa cttcgtataa tgtatgctat acgaagttat 40

<210> 16  
 <211> 40  
 <212> DNA  
 <213> Artificial sequence

<220>  
 <223> Description of Artificial sequence: G2  
 synthetic oligonucleotide

<400> 16  
 ggccataact tcgtatagca tacattatac gaagttatgc 40

<210> 17  
 <211> 50  
 <212> DNA  
 <213> Artificial sequence

<220>

<223> Description of Artificial sequence: G3  
 synthetic oligonucleotide

<400> 17  
 tataatgtat gctatacgaa gttattcctt ggcttggaat ttgcagaatt 50

<210> 18  
 <211> 50  
 <212> DNA  
 <213> Artificial sequence

<220>

<223> Description of Artificial sequence: G4  
 synthetic oligonucleotide

<400> 18  
 gcccggggga tccactagtt ctatgtct ccaccgctga atgaaaagca 50

<210> 19  
 <211> 64  
 <212> DNA  
 <213> Artificial sequence

<220>

<223> Description of Artificial sequence: G5  
 synthetic oligonucleotide

<400> 19  
 ctatgtgga taaagttttc cggaattccg ctctagactc atcaatgtta tcttatcatg 60  
 tcta 64

<210> 20  
 <211> 64  
 <212> DNA  
 <213> Artificial sequence

<220>

<223> Description of Artificial sequence: G6  
 synthetic oligonucleotide

<400> 20  
 ctatgagaca tgataagata acattgatga gtctagagcg gaattccgga aaactttatc 60  
 cata 64

<210> 21  
 <211> 64  
 <212> DNA  
 <213> Artificial sequence

0904350 057460

<220>

<223> Description of Artificial sequence: G7  
synthetic oligonucleotide

<400> 21

gctacgtaat aacttcgtat aatgtatact atacgaagtt atgggtcgat ggtgagatct 60  
ccgc 64

<210> 22

<211> 64

<212> DNA

<213> Artificial sequence

<220>

<223> Description of Artificial sequence: G8  
synthetic oligonucleotide

<400> 22

ggagatctca ccatcgaccc ataacttcgt atagtataca ttatacgaag ttattacgta 60  
gcgc 64

<210> 23

<211> 12

<212> DNA

<213> Artificial sequence

<220>

<223> Description of Artificial sequence: G9  
synthetic oligonucleotide

<400> 23

gatcttacgt aa 12

<210> 24

<211> 42

<212> DNA

<213> Artificial sequence

<220>

<223> Description of Artificial sequence: G10  
synthetic oligonucleotide

<400> 24

ggccgggaag ttcttattct ctagaaagta taggaacttc cc 42

<210> 25

<211> 42

<212> DNA

<213> Artificial sequence

<220>

<223> Description of Artificial sequence: G10  
synthetic oligonucleotide

094150 0340



<400> 25  
ggccgggaag ttctataact ttctagagaa taggaacttc cc

42

<210> 26  
<211> 60  
<212> DNA  
<213> Artificial sequence

<220>  
<223> Description of Artificial sequence: G12  
synthetic oligonucleotide

<400> 26  
aagataactt cgtataatgt atgctatacg aagttatcca agcatcacca tcgaccggtt 60

<210> 27  
<211> 60  
<212> DNA  
<213> Artificial sequence

<220>  
<223> Description of Artificial sequence: G13  
synthetic oligonucleotide

<400> 27  
aacgggtcga tggatgatgct tggataactt cgtatagcat acattatacg aagttatctt 60

<210> 28  
<211> 60  
<212> DNA  
<213> Artificial sequence

<220>  
<223> Description of Artificial sequence: G14  
synthetic oligonucleotide

<400> 28  
aagccaagca tcaccatcga ccataactt cgtataatgt atactatacg aagttatggt 60

<210> 29  
<211> 60  
<212> DNA  
<213> Artificial sequence

<220>  
<223> Description of Artificial sequence: G15  
synthetic oligonucleotide

<400> 29  
aacataactt cgtatagtat acattatacg aagttatggg tcgatgggtga tgcttggtt 60

TOPO-051050



<223> Description of Artificial sequence: J9  
synthetic oligonucleotide

<210> 43  
<211> 40

<212> DNA  
 <213> Artificial sequence

<220>  
 <223> Description of Artificial sequence: J14  
 synthetic oligonucleotide

<400> 43  
 gtaatacgac tcactatagg gaattccgcc cctctccctc 40

<210> 44  
 <211> 40  
 <212> DNA  
 <213> Artificial sequence

<220>  
 <223> Description of Artificial sequence: J15  
 synthetic oligonucleotide

<400> 44  
 gagggagagg ggcggaattc cctatagtga gtcgtattac 40

<210> 45  
 <211> 46  
 <212> DNA  
 <213> Artificial sequence

<220>  
 <223> Description of Artificial sequence: J16  
 synthetic oligonucleotide

<400> 45  
 ctccaccgct gaatgaaaag cagcatgggt gtggcaagct tatcat 46

<210> 46  
 <211> 18  
 <212> DNA  
 <213> Artificial sequence

<220>  
 <223> Description of Artificial sequence: Synthetic  
 oligonucleotide

<400> 46  
 taacaatttc acacagga 18

<210> 47  
 <211> 36  
 <212> DNA  
 <213> Artificial sequence

<220>  
 <223> Description of Artificial sequence: QT  
 synthetic oligonucleotide

09450 054960

<400> 47  
ccagtgagca gagtgacgag gactcgagct caagct 36

<210> 48  
<211> 18  
<212> DNA  
<213> Artificial sequence

<220>  
<223> Description of Artificial sequence: Q0  
synthetic oligonucleotide

<400> 48  
ccagtgagca gagtgacg 18

<210> 49  
<211> 20  
<212> DNA  
<213> Artificial sequence

<220>  
<223> Description of Artificial sequence: Neo1  
synthetic oligonucleotide

<400> 49  
accgcttcct cgtgctttac 20

<210> 50  
<211> 18  
<212> DNA  
<213> Artificial sequence

<220>  
<223> Description of Artificial sequence: Q1  
synthetic oligonucleotide

<400> 50  
gaggactcga gctcaagc 18

<210> 51  
<211> 20  
<212> DNA  
<213> Artificial sequence

<220>  
<223> Description of Artificial sequence: Neo2  
synthetic oligonucleotide

<400> 51  
gccttcttga cgagttcttc 20

TOP SECRET

<220>  
<223> Description of Artificial sequence: LoxP1  
synthetic oligonucleotide

```
<210> 53
<211> 34
<212> DNA
<213> Artificial sequence
```

```
<220>
<223> Description of Artificial sequence:  Lox511
      synthetic oligonucleotide
```

<400> 53  
ataacttcgt ataatgtatg ctatacgaag ttat 34

```
<210> 54
<211> 8693
<212> DNA
<213> Artificial sequence
```

```
<220>
<223> Description of Artificial sequence:  DNA
      sequence of plasmid pF1ExR
```

```
<220>
<223> Position 1 to 360 SV40 promotor, sense
```

```
<220>
<223> Position 365 to 1015 rabbit beta globin intron,
      sense
```

```
<220>
<223> Position 1050 loxP1 site, sense
```

```
<220>
<223> Position 1130 lox511 site, sense
```

```
<220>
<223> Position 1170 to 2050 EGFP polyA gene, sense
```

<220>  
<223> Position 2060 to 5700 LacZ polyA gene, antisense

```
<220>
<223> Position 5710 loxP1 site, antisense
```

&lt;220&gt;

&lt;223&gt; Position 5790 lox511 site, antisense

&lt;220&gt;

&lt;223&gt; Position 5830 to 8693 vector sequence

&lt;400&gt; 54

```

gtcgaacttct gaggcggaaa gaaccagctg tggaaatgtgt gtcagtttagg gtgtggaaaag 60
tcccaggct cccagcagg cagaagtatg caaagcatgc atctcaatta gtcagcaacc 120
aggtgtggaa agtccccagg ctcccagca ggcagaagta tgcaaagcat gcatctcaat 180
tagtcagcaa ccatagtccc gccctaact ccgcccattcc cgcccctaac tccgcccagt 240
tccgcccatt ctccgcccc tggctgacta atttttttta tttatgcaga ggccgaggcc 300
gcctcggcct ctgagctatt ccagaagtag tgaggaggct tttttggagg cctaggcttt 360
tgcaaaaagc tggatcgatc ctgagaactt cagggtagt ttggggaccc ttgattgttc 420
tttctttttc gctattgtaa aattcatgtt atatggagg ggcaaagttt tcagggtgtt 480
gtttagaatg ggaagatgtc ccttgatca ccatggaccc tcatgataat tttgtttctt 540
tcaactttcta ctctgttgac aaccattgtc tcctcttatt ttcttttcat tttctgtaac 600
tttttcgtta aacttttagt tgcatttga acgaattttt aaattcactt ttgtttatatt 660
gtcagattgt aagtactttc tctaactcatt ttttttcaa ggcaatcagg gtatattata 720
ttgtacttca gcacagtttt agagaacaat tgttataatt aaatgataag gtagaataatt 780
tctgcatata aattctggct ggctgtgaaa tattcttatt ggtagaaaaca actacatcct 840
ggcatcctc ctgcttttct ctttatggtt acaatgatat aactgtttg agatgaggat 900
aaaatactct gagtccaaac cgggcccctc tgctaaccat gttcatgcct tcttcttttt 960
cctacagctc ctgggcaacg tgctggttat tgtgctgtct catcattttg gcaaagaatt 1020
gtaatacgac tcaactatagg gcgaattgat aacttcgtat agcatacatt atacgaagt 1080
atccaaagct caccatcgac ccgaattgcc aagcatcacc atcgacccat aacttcgtat 1140
agtatacatt atacgaagtt atcgaattcc catggtgagc aagggcgagg agctgttcac 1200
cggggtggtg cccatcctgg tcgagctgga cggcgacgta aacggccaca agttcagcgt 1260
gtccggcgag ggcgagggcg atgccaccta accctgaagt tcatctgcac 1320
caccggcaag ctgcccgtgc cctggccac cctcgtgacc accctgacct acggcgtgca 1380
gtgcttcagc cgctaccccg accacatgaa gcagcacgac ttcttcaagt ccgccatgcc 1440
cgaaggctac gtccaggagc gcaccatctt cttcaaggac gacggcaact acaagacccg 1500
cgccgaggtg aagttcgagg gcgacaccct ggtgaaccgc atcgagctga agggcatcga 1560
cttcaaggag gacggcaaca tcctggggca caagctggag tacaactaca acagccacaa 1620
cgtctatata atggccgaca agcagaagaa cggcatcaag gtgaacttca agatccgcca 1680
caacatcgag gacggcagcg tgcagctcgc cgaccactac cagcagaaca ccccatcgg 1740
cgacggcccc gtgctgctgc ccgacaacca ctacctgagc acccagtcg ccctgagcaa 1800
agaccccaac gagaagcgcg atcacatggt cctgctggag ttctgtgacc cgccgggat 1860
cactctcggc atggacgagc tgtacaagta agaattcgga tcttattaaa gcagaacttg 1920
tttattgcag cttataatgg ttacaaataa agcaatagca tcacaaattt cacaaataaa 1980
gcattttttt cactgcattc tagttgtggt ttgtccaaac tcatcaatgt atcttatcat 2040
gtctggctga ctctagtgga tccagacatg ataagataac attgatgagt ttggacaaac 2100
cacaactaga atgcagtga aaaaatgctt tatttgtgaa atttgtgatg ctattgcttt 2160
atttgtaacc attataagct gcaataaaca agttccgagt ttgtcagaaa gcagaccaa 2220
cagcggttgg aataatagcg agaacagaga aatagcggca aaaataatac ccgtatcact 2280
tttgctgata tggttgatgt catgtagcca aatcgggaaa aacgggaagt aggtctccat 2340
gataaaaaag taaaagaaaa agaataaacc gaacatccaa aagtttgtgt tttttaata 2400
gtacataatg gatttcctta cgcgaaatac ggcgacacat ggctgcccg gttattatta 2460
tttttgacac cagaccaact ggtaatggta gcgaccggcg ctgagctgga attccgccga 2520
tactgacggg ctccaggagt cgtcgccacc aatccccata tggaaaccgt cgatattcag 2580
ccatgtgcct tcttcgcgt gcagcagatg gcgatggctg gtttccatca gttgctgttg 2640
actgtagcgg ctgatgttga actggaagtc gccgcgccac tgggtgtggc cataattcaa 2700
ttcgcgcgtc ccgacgcga gaccgttttc gctcgggaag acgtacgggg tatacatgtc 2760
tgacaatggc agatccagc ggtcaaaaaca ggcggcagta aggcggtcgg gatagttttc 2820
ttgcggccct aatccgagcc agtttacccg ctctgctacc tgcgccagct ggcagttcag 2880
gccaatccgc gccgatgct gtgtatcgct cgccacttca acatcaacgg taatcgccat 2940
ttgaccacta ccatcaatcc ggtaggtttt ccggctgata aataaggttt tcccctgatg 3000

```



ctgccacgcg	tgagcggctcg	taatcagcac	cgcacatcgca	agtgtatctg	ccgtgcaactg	3060
caacaacgct	gcttcggcct	ggtaatggcc	cgccgccttc	cagcgttcga	cccaggcggtt	3120
agggtcaatg	cgggtcgctt	cacttacgcc	aatgtcggtta	tccagcgggtg	cacgggtgaa	3180
ctgatcgcg	agcggcgctca	gcagttgttt	tttatcgcca	atccacatct	gtgaaagaaa	3240
gcctgactgg	cggttaaatt	gccaacgctt	attacccagc	tcgatgcaaa	aatccatttc	3300
gctgggtggc	agatgcggga	tggcgtggga	cgccgcgggg	agcgtcacac	tgaggttttc	3360
cgccagacgc	cactgctgcc	aggcgtgat	gtgcccggct	tctgaccatg	cggtcgctt	3420
cgggtgcaact	acgcgtactg	tgagccagag	ttgcccggcg	ctctccggct	gcggtagttc	3480
aggcagttca	atcaactggt	taccttgtgg	agcgacatcc	agaggcactt	caccgcttgc	3540
cagcggctta	ccatccagcg	ccaccatcca	gtgcaggagc	tcgttatcgc	tatgacggaa	3600
caggatttcg	ctggtcactt	cgatggtttg	cccggataaa	cggaaactgga	aaaactgctg	3660
ctggtgtttt	gcttcgcgtca	gcgctggatg	cggcgtgcgg	tcggcaaaga	ccagaccgtt	3720
catacagaac	tggcgatcgt	tcggcgatc	gccaaaatca	ccgcgtaag	ccgaccacgg	3780
gttgccggtt	tcacatatt	taatcagcga	ctgatccacc	cagtcaccaga	cgaagccgcc	3840
ctgtaaacgg	ggatactgac	gaaacgcctg	ccagtattta	gcgaaaccgc	caagactgtt	3900
acccatcgcg	tgggcgtatt	cgcaaaggat	cagcgggcgc	gtctctccag	gtagcgaaag	3960
ccattttttg	atggaccatt	tcggcacagc	cgggaagggc	tggtcttcat	ccacgcgcgc	4020
gtacatcggg	caaataatat	cgggtggccg	ggtgtcggct	ccgccgcctt	catactgcac	4080
cgggcgggaa	ggatcgacag	atgtgatcca	gcgatacagc	gcgtcgtgat	tagcgcctg	4140
gcttgattca	ttcccagcg	accagatgat	cacactcggg	tgattacgat	cgcgctgcac	4200
cattgcggtt	acgcgttcgc	tcactgcggc	tagccagcgc	ggatcatcgg	tcagacgat	4260
cattggcacc	atgcggtggg	tttcaatatt	ggcttcattc	accacataca	ggcgttagcg	4320
gtcgcacagc	gtgtaccaca	gcggatggtt	cggataatgc	gaacagcgca	cggcgttaaa	4380
gttggtctgc	ttcatcagca	ggatatcctg	caccatcgtc	tgctcatcca	tgacctgacc	4440
atgcagagga	tgatgctcgt	gacgggttaac	gcctcgaatc	agcaacggct	tgccgttcag	4500
cagcagcaga	ccattttcaa	tcgcgcacctc	gcggaaccgc	acatcgagg	cttctgcttc	4560
aatcagcgtg	ccgtcggcgg	tgtgcagttc	aaccaccgca	cgatagagat	tcgggatttc	4620
ggcgtccac	agtttcgggt	tttcgacgtt	cagacgtagt	gtgacgcgat	cggcataacc	4680
accacgctca	tcgataattt	caccgcgcaa	aggcgcgggtg	ccgctggcga	cctgcgtttc	4740
accctgccat	aaagaaactg	ttaccgtag	gtagtacgc	aactcgccgc	acatctgaac	4800
ttcagcctcc	agtacagcgc	ggctgaaatc	atcattaaag	cgagtggcaa	catggaaatc	4860
gctgatttgt	gtagtgcgtt	tatgcagcaa	cgagacgtca	cggaaaatgc	cgctcatccg	4920
ccacatatcc	tgatcttcca	gataactgcc	gtcactccaa	cgacgacca	tcaccgcgag	4980
gcggttttct	ccggcgcgta	aaaatgcgct	caggtcaaat	tcagacggca	aacgactgtc	5040
ctggccgtaa	ccgaccagc	gcccgttgca	ccacagatga	aacgcggagt	taacgccatc	5100
aaaaataatt	cgctctggc	cttctgttag	ccagctttca	tcaacattaa	atgtgagcga	5160
gtaacaacc	gtcggattct	ccgtgggaac	aaacggcgga	ttgaccgtaa	tgggtaggtt	5220
tacgttggtg	tagatgggct	catcgtaacc	gtgcatctgc	cagtttgagg	ggacgacgac	5280
agtatcggcc	tcaggaagat	cgcactccag	ccagctttcc	ggcacgcgtt	ctggtgccc	5340
aaaccaggca	aagcgccatt	cgccattcag	gctgcgcaac	tggtgggaag	ggcgatcggt	5400
gcgggcctct	tcgctattac	gccagctggc	gaaaggggga	tgtgctgcaa	ggcgattaa	5460
ttgggtaacg	ccagggtttt	cccagtcacg	acgttgtaaa	acgacggcca	gtgccaaagt	5520
tggactcaaa	aaacttagca	attctgaagg	aaagtctctg	gggtcttcta	cctttctctt	5580
cttttttgcg	gaattccgga	aaactttatc	catctttgca	aagctttttg	caaaagccta	5640
ggcctccaaa	aaagcctcct	cactacttct	ggaatagctc	agaggccgtc	gaccccgga	5700
attcggtacc	gataaacttcg	tataatgtat	gctatacgaa	gttatccaag	catcaccatc	5760
gaccctctag	tcagatctc	accatcgacc	cataacttcg	tataatgtat	actatacgaa	5820
gttattctag	actcttcgc	ttcctcgctc	actgactcgc	tgcgctcggt	cgttcggctg	5880
cggcgagcgg	tatcagctca	ctcaaaggcg	gtaatacggg	tatccacaga	atcaggggat	5940
aacgcaggaa	agaacatgtg	agcaaaaggc	cagcaaaagg	ccaggaaccg	taaaaaggcc	6000
gcgttgctgg	cgtttttcca	taggctccgc	ccccctgacg	agcatcacia	aaatcgacgc	6060
tcaagtccaga	ggtggcgaaa	cccgacagga	ctataaagat	accaggcggt	ccccctgga	6120
agctccctcg	tgcgctctcc	tgttcgcacc	tgcgcgctta	ccggatacct	gtccgccttt	6180
ctcccttcgg	gaagcgtggc	gctttctcaa	tgctcacgct	gtaggatatc	cagttcggtg	6240
taggtcggtc	gctccaagct	gggctgtgtg	cacgaacccc	ccgttcagcc	cgaccgctgc	6300
gccttatccg	gtaactatcg	tcttgagtc	aaccgcgtaa	gacacgactt	atcgccactg	6360
gcagcagcca	ctggtaacag	gattagcaga	gcgaggtatg	taggcgggtg	tacagagttc	6420
ttgaagtggg	ggcctaacta	cggctacact	agaaggacag	tatttggtat	ctgcgctctg	6480

ctgaagccag ttaccttcgg aaaaagagtt ggtagctctt gatccggcaa acaaaccacc 6540  
 gctggtagcg gtggtttttt tgtttgcaag cagcagatta cgcgcagaaa aaaaggatct 6600  
 caagaagatc ctttgatctt ttctacgggg tctgacgctc agtggaaacga aaactcacgt 6660  
 taagggattt tggatcatgag attatcaaaa aggatcttca cctagatcct tttaaattaa 6720  
 aaatgaagtt ttaaatacaat ctaaagtata tatgagtata cttgggtctga cagttaccaa 6780  
 tgcttaatca gtgaggcacc tatctcagcg atctgtctat ttcgttcac ccatagttgcc 6840  
 tgactccccg tcgtgtagat aactacgata cgggagggtt taccatctgg cccagtgct 6900  
 gcaatgatac cgcgagaccc acgctcaccg gctccagatt tatcagcaat aaaccagcca 6960  
 gccggaaggg ccgagcgcag aagtggctct gcaactttat ccgcctccat ccagtctatt 7020  
 aattgttgcc gggaagctag agtaagtagt tcgccagtta atagtttgcg caacgttgtt 7080  
 gccattgcta caggcatcgt ggtgtcacgc tcgtcgtttg gtatggcttc attcagctcc 7140  
 ggttcccaac gatcaaggcg agttacatga tcccccatgt tgtgcaaaaa agcggttagc 7200  
 tccttcggtc ctccgatcgt tgtcagaagt aagtggccg cagtgttatc actcatgggt 7260  
 atggcagcac tgcataattc tcttactgtc atggccatccg taagatgctt ttctgtgact 7320  
 ggtgagtact caaccaagtc attctgagaa tagtgtatgc ggcgaaccgag ttgctcttgc 7380  
 ccggcgctca tacgggataa taccgcgcca catagcagaa ctttaaaagt gctcatcatt 7440  
 ggaaaacgtt ctccggggcg aaaactctca aggatcttac cgctgttgag atccagttcg 7500  
 atgtaaccca ctctgcacc caactgatct tcagcatctt ttactttcac cagcgtttct 7560  
 gggtagcaaa aaacaggaag gcaaaatgcc gcaaaaaagg gaataagggc gacacggaaa 7620  
 tgttgaaatc tcatactctt cttttttcaa tattattgaa gcatttatca gggttattgt 7680  
 ctcatgagcg gatacatatt tgaatgtatt tagaaaaata aacaaatagg ggtccgcgc 7740  
 acatttcccc gaaaagtgcc acctgacgtc taagaaacca ttattatcat gacattaacc 7800  
 tataaaaaata ggcgtatcac gaggccccct tcgtctcgcg cgtttcggtg atgacggtga 7860  
 aaacctctga cacatgcagc tcccgagac ggtcacagct tgtctgtaag cggatgccgg 7920  
 gagcagacaa gcccgctcagg gcgcgtcagc ggggtgttggc ggggtgcggg gctggcttaa 7980  
 ctatgcggca tcagagcaga ttgtactgag agtgcaccat atgcgggtgtg aaataccgca 8040  
 cagatgcgta aggagaaaaat accgcacatcag gaaattgtaa acgttaatat tttgttaaaa 8100  
 ttcgcgttaa atttttgtta aatcagctca ttttttaacc aataggccga aatcggcaaa 8160  
 atcccttata aatcaaaaga atagaccgag atagggttga gtgttggtcc agtttggaac 8220  
 aagagtcacc tattaaagaa cgtggactcc aacgtcaaaag ggcgaaaaac cgtctatcag 8280  
 ggcgatggcc cactacgtga accatcacc taatcaagtt ttttggggtc gaggtgccgt 8340  
 aaagcactaa atcggaaccc taaagggagc ccccgattta gagcttgacg gggaaagccg 8400  
 gcgaacgtgg cgagaaagga agggaagaaa gcgaaaggag cgggcgctag ggcgctggca 8460  
 agtgtagcgg tcacgtcgcg cgtaaccacc acaccgcgcg cgcttaatgc gccgctacag 8520  
 ggcgcgtcgc gccattcgcc attcaggcta cgcaactgtt gggaaggcg atcgggtcgg 8580  
 gcctcttcgc tattacgcca gctggcgaag gggggatgtg ctgcaaggcg attaagttgg 8640  
 gtaacgccag ggttttccca gtcacgacgt tgtaaaacga cggccagtga att 8693

<210> 55

<211> 17135

<212> DNA

<213> Artificial sequence

<220>

<223> Description of Artificial sequence: DNA  
sequence of plasmid py6.0FlExBeta-Gal

<220>

<223> Position 1 to 2360 genomic DNA RARgamma locus,  
sense

<220>

<223> Position 2365 loxP1 site, sense

<220>

<223> Position 2445 lox511 site, sense

<220>  
 <223> Position 2480 to 2750 genomic DNA RARgamma locus,  
 sense  
  
 <220>  
 <223> Position 2753 to 2901 exon 8 RARgamma locus, sense  
  
 <220>  
 <223> Position 2902 to 3395 genomic DNA RARgamma locus,  
 sense  
  
 <220>  
 <223> Position 3400 to 6983 LacZ polyA gene, antisense  
  
 <220>  
 <223> Position 6984 to 6992 part exon 8 RARgamma locus,  
 antisense  
  
 <220>  
 <223> Position 6993 to 7257 genomic DNA RARgamma locus,  
 antisense  
  
 <220>  
 <223> Position 7265 loxP1 site, antisense  
  
 <220>  
 <223> Position 7305 FRT site, sense  
  
 <220>  
 <223> Position 7345 to 9150 PGK Neo polyA gene, sense  
  
 <220>  
 <223> Position 9155 FRT site, sense  
  
 <220>  
 <223> Position 9265 lox511 site, antisense  
  
 <220>  
 <223> Position 9300 to 12175 genomic DNA RARgamma locus,  
 sense  
  
 <220>  
 <223> Position 12175 to 17135 vector sequence

<400> 55  
 gaattcttaa ccttgccatg cccagtataa tgggggaacta ctgggcacat tggctggcat 60  
 ctgagtcaga aatatctggg tatatgtgta tgtgtgcgtg ggggtggttg ctgtaaggct 120  
 cctagacagg gactatataat tcttatcttag gcctctggag acattttggg cttggttagct 180  
 caatattttt gcattttctgt ttgagccagt aagtttggcc agtagtgcac ccctgtcaca 240  
 ctgagaggga aggtgggttta aagtagggga ggatttgtgt ttactggctt ttggatggaa 300  
 acttttagtgt cctggtgttg tgctgactga gtgcggtggt tggtagtaga gctgttttagc 360  
 ccgtagctct gtgacttgct atctaccaac atggagcact catgccttga tgtttgtgct 420  
 ttcctctgtt taaagggtcca gcccgaacta aggcagtgcc cactgtagggt ctgtctgctt 480  
 tggcgtctgt gtcattgttg cctgcaaaag tgtgtgtctt caaggagatt gtgtgctaga 540  
 ttgtgagtc aggcagctca agctctgggc cttgcagctg ggagcgttta cagcgggtta 600  
 taaagagttt gtttgaagct ccgctcagcc tggccaggaa tttcctcaat ttcagcaatt 660  
 tgggctttta aaggagaaaa ccccgagccc acccctcct cctcagcagg ggccctgct 720  
 gagcccagga gcggtgtccc tgtgctgagg tctcagctca gtgttgaaga ggggacccag 780

aagaccctgc cagcttttgc gaacctccac ccacagcgac ctcagagcca tcgcatggca 840  
 ctttcagata ccggggggcg ggatgatgtg ccagaggggt gccagagagag ggtgccggtg 900  
 ccattaggat gggaaaggct gcccaggggc aggcctctctg gggccttcgt cttataattg 960  
 gctggtgctg cctgccccat gccagcctga ccgcacccag gccttgcgca agagaggaaa 1020  
 tgaggaaatg aggcagcgct ctgtgggtag ggagggcgctc agtgaggag agagtaccac 1080  
 cccacgctca ggcctgtggg gacccagga tgggctgaaa gtgagggccg gaaaggcctt 1140  
 ccaggcttcc ccaaacctcc cagcacctac cattcaggca accccacccc cagtcttgaa 1200  
 taaactccct gcacccttcc gcccccttcc ttttgagggg gaatctaact ccagcaggat 1260  
 tcttatgcta attgggtgcg tgggggggtg ggtgggtgga gaaggcttcc ctctttgtaa 1320  
 ggtggtggag ctggtctgga accccaacc tataggctct tctgtcctct cactaccttg 1380  
 ggtctcagta tggacttggt accaggtggg ttacatggca tgggaggaaa gacgtgag 1440  
 gtcttcaaga tccaccccc accaccacca cttttttcca aattcgggca gcaggtcctg 1500  
 caggctggat agttttcaga tatcctgagc ttctgagggg gaacctata ctctcccagc 1560  
 ctgtggcagg cttgtactct cagcagcctc ctgtataaag tgtgggctcc cccaactctg 1620  
 ggccttggtc aggactccat ataaactaca atgactgttt tctgaagcag ttcaggaatg 1680  
 aagacaggct tggaaagggt ctggggcagc tcccttcccc ctcagctctg tttacccagt 1740  
 gtcacctgac cctctgctac accccaaact gtcctggac ctaagggcct gagtgaatcc 1800  
 ctgttttccct ccacagcttc tttcactaaa cgccacgtag ctatgggtcag cgcccctgag 1860  
 agccttggtc cccagctcag ccgacactga gccggtcact cagctgctaa tgctcctttt 1920  
 ctgacctgag agcactttca ggaatgactc acattaaagc attcagccag gtgccagctg 1980  
 taggtagcct gtttgcctca tttgccttta ctttgcggc cctcctcccc acccccacc 2040  
 gccaccaa at gctttcaggg gaactctggg attactagag tcaggagtga gccctaacct 2100  
 ttcagtttta tgccctccc cgccccctt aaaaatgtgt atggtgttct gtctatatgt 2160  
 attttcgcgt gccatttttg tgcctggtgc ccatggaaga tggagagggt aaccggttct 2220  
 gttagaactg gcgattacaa atggttgtaa actaccatgt agatgctggg aatggaacc 2280  
 tggctccttg gagagcagcc agtgctctta cctgctgagt cccaaccaat cttcaacttt 2340  
 atggagcaga agcagagaag ttaagataac ttcgtataat gtatgctata cgaagttatc 2400  
 caagcatcac catcgaccg ttaagccaag catcaccatc gaccataac ttcgtataat 2460  
 gtatactata cgaagtctat ttaactcctt ggcctggaat ttgcagaatt gaacgttaat 2520  
 gtagaagagt tggctttatg ggggtgggga tggggtaggg ggcagtgggt ggcctgaaa 2580  
 tccaacaag ctacaaagag tgggtggtctg ggctttccag ggagtacctg ttaagggtct 2640  
 atgcacaagg gtgacaacag cggtcaccag caggtcccaa gaaagagagg ccatgggatg 2700  
 aggggtgcttc tgctcagctt ctgcttatct tctcatgctg cttttcattc agcgggtggag 2760  
 acacagagca ccagctcgga ggagatggtt cccagctctc cctcaccccc accacctcct 2820  
 cgggtctata agccatgctt tgtatgcaat gacaagtctt ctggctacca ctatgggggtc 2880  
 agctcctgtg aaggctgcaa ggtgtgtatg tgggtggggc ggggtgagttt agcactcagt 2940  
 tgaactggct tataccatca gagatggaaa cataaggctg gctggcaatg tagcttagta 3000  
 ggtagaatgc ttgcttagca tacttgagaa ctcagcaaca catcagagac tctcttatgc 3060  
 caatgctcta agggcagaag caggcagatc tctgtgagtt caaggccagc ctagtctaca 3120  
 gagctagttc caggacagcc agggctacac aaagaaacct gtcttgaaga accaaaaatt 3180  
 aatgaataag tgattagata aataaaaaatc gttttaaagg tagggggccc aggtactgtg 3240  
 ttcacatgag tgtttttgtc tgtgtggggg gagggactgc tttgggcata aatgagtgc 3300  
 tgggtggggc aggtgctgag gacctagctc agtgggtggaa tgcttacagc atagtgtaca 3360  
 gaaggtttga tagtgtgttg tgtatatagg catggtacga tccactagtt ctagtagaca 3420  
 tgataagata acattgatga gtctagttag tttggacaaa ccacaactag aatgcagtga 3480  
 aaaaaatgct ttattttgta aattttgtgat gctattgctt tatttgtaac cattataagc 3540  
 tgcaataaac aagttccgag tttgtcagaa agcagaccaa acagcggttg gaataatagc 3600  
 gagaacagag aaatagcggc aaaaataata cccgtatcac ttttgctgat atgggtgatg 3660  
 tcatgtagcc aaatcgggaa aaacgggaag taggctccca tgataaaaaa gtaaaagaaa 3720  
 aagaataaac cgaacatcca aaagtttgtg ttttttaaat agtacataat ggatttccct 3780  
 acgcgaaata cgggcagaca tggcctgccc ggttattatt atttttgaca ccagaccaac 3840  
 tggtaatggt agcgaccggc gctcagctgg aattccgccc atactgacgg gctccaggag 3900  
 tgcgcccac caatccccat atggaaaccg tccatattca gccatgtgcc ttcttccgcg 3960  
 tgcagcagat ggcgatggct ggtttccatc agttgtgttt gactgtagcg gctgatgttg 4020  
 aactggaagt cgcgcgcca ctgggtggg ccaataattca attcgcgcgt cccgcagcgc 4080  
 agaccgtttt cgctcgggaa gacgtacggg gtatacatgt ctgacaatgg cagatcccag 4140  
 cggcctaaaac aggcggcagt aaggcggtcg ggatagtttt cttgcggccc taatccgagc 4200  
 cagtttacc cgtctgctac ctgcgccagc tggcagttca ggccaatccg cgccggatgc 4260

ggtgtatcgc tcgccacttc aacatcaacg gtaatcgcca tttgaccact accatcaatc 4320  
 cggtaggttt tccggtgat aaataaggtt tccccctgat gctgccacgc gtgagcggtc 4380  
 gtaatcagca ccgcatcagc aagtgtatct gccgtgcact gcaacaacgc tgcttcggcc 4440  
 tggtaatggc ccgccgcctt ccagcgttcg acccaggcgt taggggtcaat gcgggtcgct 4500  
 tcacttacgc caatgtcgtt atccagcggg gcacgggtga actgatcgcg cagcggcgctc 4560  
 agcagttggt ttttatcgcc aatccacatc tgtgaaagaa agcctgactg gcgggttaa 4620  
 tgccaacgct tattaccag ctcgatgcaa aaatccattt cgctgggtgg cagatgcggg 4680  
 atggcgtggg acgcggcggg gagcgtcaca ctgaggtttt ccgccagacg ccactgctgc 4740  
 caggcgtga tgtgcccgcc ttctgacct gcggtcgctg tcggttgac tacgcgtact 4800  
 gtgagccaga gttgcccgcc gctctccggc tgcggtagt caggcagttc aatcaactgt 4860  
 ttacctgtg gagcgacatc cagaggcact ctatgacgga ccagcggctt accatccagc 4920  
 gccaccatcc agtgcaggag ctcggttatcg ctatgacgga acaggtattc gctggtcact 4980  
 tcgatggttt gcccgataa acggaactgg aaaaactgct gctggtgttt tgcttcgctc 5040  
 agcgtggat gcggcgtgcg gtccgcaaag accagaccgt tcatacagaa ctggcgatcg 5100  
 ttccggtat ccgcaaaatc accgccgtaa gccgaccacg ggttgccgtt ttcacatcat 5160  
 ttaatcagcg actgatccac ccagtcaccg acgaagccgc cctgtaaacc gggatactga 5220  
 cgaaacgcct gccagtattt agcgaaaccg ccaagactgt taccatcgc gtggcgat 5280  
 tcgcaaagga tcagcggggc cgtctctcca ggtagcgaaa gccatttttt gatggaccat 5340  
 ttccgacacg ccgggaaggc ctggtcttca tccacgcgcg cgtacatcgg gcaataata 5400  
 tcggtggccg tgggttcggc tccgcgcct ccatatgca ccgggcggga aggatcgaca 5460  
 gatttgatcc agcgatacag cgcgtcgtga ttacgcctg ggctgattc attccccagc 5520  
 gaccagatga tcacactcgg gtgattacga tcgcgtgca ccattcgcgt tacgcgttcg 5580  
 ctcatcgccg gtagccagcg cggatcatcg gtcagacgat tcattggcac catgccgtgg 5640  
 gtttcaatat tggcttcac caccacatac aggcctgac ggtcgcacag cgtgtaccac 5700  
 agcggatggt tcggataatg cgaacagcgc acggcgtaa agttgttctg ctcatcagc 5760  
 aggatattct gcaccatcgt ctgctcatcc atgacctgac catgcagagg atgatgctcg 5820  
 tgacggtaa cgcctcgaat cagcaacggc ttgccgttca gcagcagcag accattttca 5880  
 atccgcacct ccgggaacc gacatcgag gcttctgctt caatcagcgt gccgtcggcg 5940  
 gtgtgcagtt caaccaccgc acgatagaga ttccggattt cggcgctcca cagtttcggg 6000  
 ttttcgacgt tcagacgtag tgtgacgca tcggcataac caccacgctc atcgataatt 6060  
 tcaccgccga aaggcgcggt gccgtggcg acctgcgttt caccctgcca taaagaaact 6120  
 gttaccgta ggtagtacg caactcgccg cacatctgaa cttcagcctc cagtacagcg 6180  
 cggctgaaat catcattaaa gcgagtggca acatggaaat cgctgatttg tgtagtcgg 6240  
 ttatgcagca acgagacgtc acggaaaatg ccgctcatcc gccacatatt ctgatcttcc 6300  
 agataactgc cgtcactcca acgcagcacc atcacccgca ggccggtttt cccggcgcg 6360  
 aaaaatgcgc tcaggtcaaa ttacagcggc aaacgactgt cctggccgta accgaccag 6420  
 cggcggttgc accacagatg aaacgcccag ttaacgccat caaaaataat tcgcgtctgg 6480  
 ccttcctgta gccagctttc atcaacatta aatgtgagcg agtaacaacc cgtcggattc 6540  
 tccgtgggaa caaacggcggt attgaccgta atgggtagg ttacgttggg gtagatggg 6600  
 gcatcgtaac cgtgcatctg ccagtttgag gggacgacga cagtatcggc ctcaggaaga 6660  
 tcgcactcca gccagctttc cggcaccgct tctggtgccg gaaaccaggc aaagcggcat 6720  
 tcgccattca ggctgcgcaa ctggtgggaa gggcgatcgg tgcgggcctc ttcgctatta 6780  
 cgccagctgg cgaaaggggg atgtgctgca aggcgattaa gttgggtaac gccagggttt 6840  
 tcccagtcac gacgttgtaa aacgacggcc agtgccaagc ttggactcaa aaaacttagc 6900  
 aattctgaag gaaagtcctt ggggtcttct acctttctct tcttttttag cggattccg 6960  
 gaaaacttta tccatactag atgtctccac cgctgaatga aaagcagcat gagaagataa 7020  
 gcagaagctg agcagaagca cctcatccc atggcctctc tttcttggga cctgctggg 7080  
 accgctgttg tcacccttgt gcataagccc ttaacaggta ctocctggaa agccagacc 7140  
 accactcttt gtagcttggt gggatttcag gccccaccac tgccccctac cccatcccca 7200  
 cccccataaa gccaaactct ctacattaac gttcaattct gcaaattcca ggccaaggac 7260  
 cggataactt cgtatagcat acattatacg aagttatgcg gccgggaagt tcctattctc 7320  
 tagaaagtat aggaacttcg cggccaattc taccgggtag gggaggcgct tttcccaagg 7380  
 cagtctggag catgcgcttt agcagccccg ctgggcactt ggcgctacac aagtggcctc 7440  
 tggcctcgca cacattccac atccaccggt aggcgccaac cggtccgtt ctttgggtgg 7500  
 ccttcgcgc caccttctac tctccctta gtcaggaagt tccccccgc cccgcagctc 7560  
 gcgtcgtgca ggacgtgaca aatgggaagta gcacgtctca ctagtctcg gcagatggag 7620  
 agcaccgctg agcaatggaa gcgggtaggc ctttggggca gcggccaata gcagctttgc 7680  
 tccttcgctt tctgggctca gaggctggga aggggtgggt ccggggggcg gctcagggg 7740

gggctcaggg gcggggcgggc gcccgaaggt cctccggagg cccggcattc tgcacgcttc 7800  
 aaaagcgcac gtctgcgcgc tgttctcctc ttctctcatc cggggccttt cgacctgcag 7860  
 ccaatatggg atcgccatt gaacaagatg gattgcacgc aggttctccg gccgcttggg 7920  
 tggagaggct attcggtat gactgggcac aacagacaat cggctgctct gatgcgcgcg 7980  
 tgttccggct gtcagcgcag gggcgcccg tttttttgt caagaccgac ctgtccgggtg 8040  
 ccctgaatga actgcaggac gaggcagcgc ggctatcgtg gctggccacg acgggcgttc 8100  
 cttgcgcagc tgtgctcgac gttgtcactg aagcgggaag ggactggctg ctattgggcg 8160  
 aagtgcgggg gcaggatctc ctgtcatctc acctgctcc tgccgagaaa gtatccatca 8220  
 tggctgatgc aatgcggcgg ctgcatacgc ttgatccggc tacttgccca ttcgaccacc 8280  
 aagcgaaaca tcgcctcgag cgagcacgta ctcggaatgga agccggtctt gtcgatcagg 8340  
 atgatctgga cgaagagcat caggggctcg cgccagccga actgttcgcc aggtcaagg 8400  
 cgcgcacgac cgacggcgag gatctcgtcg tgacctatgg cgatgcctgc ttgccgaata 8460  
 tcatggtgga aaatggcgcg ttttctggat tcatcgactg tggccggctg ggtgtggcgg 8520  
 accgctatca ggacatagcg ttggctaccc gtgatattgc tgaagagctt ggcggcgaat 8580  
 gggctgaccg cttcctcgtg ctttacggta tcgccgctcc cgattcgcag cgcacgcct 8640  
 tctatcgctt tcttgacgag ttcttctgag gggatccgct gtaagtctgc agaaattgat 8700  
 gatctattaa acaataaaga tgtccactaa aatggaagt tttcctgtca tactttgtta 8760  
 agaagggtga gaacagagta cctacatttt gaatggaagg attggagcta cgggggtggg 8820  
 ggtgggggtg gattagaata aatgcctgct ctttactgaa ggctctttac tattgcttta 8880  
 tgataatggt tcatagttgg atatacataa ttaaacaagc aaaaccaatt aagggccagc 8940  
 tcatctctcc cactcatgat ctatagatct atagatctct cgtgggatca ttgtttttct 9000  
 cttgattccc actttgtggt tctaagtact gtggtttcca aatgtgtcag tttcatagcc 9060  
 tgaagaacga gatcagcagc ctctgttcca catacacttc attctcagta ttgttttgcc 9120  
 aagttctaata tccatcagaa gctcgatacc gtcgaggaag ttcctattct ctagaaagta 9180  
 taggaacttc cggcccgga agttcctata cttctagag aataggaact tcccgccgc 9240  
 caccgcggag atctcacat acacacaaac acacaacaca cacgcacgac acgactggtc 9300  
 taccatgcgt attcacacac agggccaatt gttttgcttg agaaatactg gtattcccag caccctgttt 9420  
 aggtctagct atgcctccaa attcagggct tcttcagacg cagcattcag aaaaacatgg 9480  
 agtgacactc ctgcttccaa aaaaactgta tcatcaacaa ggtcaccaga aatcgatgcc 9540  
 tgtatacatg tcaccgtgac tgtttcgaag tgggcatgtc caaggaagggt aggtctctc 9600  
 agtactgcag gctacaaaag gtgcggtgt ccactttgcc gtccagcttc cctgaccctg 9660  
 ctatcctgtc ctatcgtgtc ctgctttctt ctccaagacc attcccatta gattagctct 9720  
 agatctcgcc tgccctgtaa ctgctttctt aggagggttg ggctcatccc ttcctctcc 9780  
 cttcacccctg tagcttctgt ttggtggagc cctgagatgg ctctgactgg cccctccttt ccaactcccc 9840  
 tgttctttca caggacagat aggtctataag tggatatact gcctgcataat cctgcccccc 9900  
 cccccaccat tgtgtgcca agctcctgca gggcaaccgg aagggcagga tggagccgaa ttggcctggg 9960  
 tccaaccccc ggctgtaggc tctgggtggg gctggggcaa accagcctgg aaataggaga 10020  
 gagggagcat gagagggaaa ctaaggcact aatacgtatt tttaaagaga actgagccca 10080  
 ttaagctagg atgagagaag acgcccacat ggagaatttg agccgggctg ggtggcacac 10140  
 gcctttaatc ccagcactcg ggaggcagag gcaggcggat ttctgagttc aaggccagcc 10200  
 tgggtctacaa agtgagttcc aggcagcca gggctataca gagaaaccct gattcaaaaa 10260  
 accaaaaaaa aaaaaaaaaa aaaaagaaag aaaagaaaaa acaggagggt cctgaggatc 10320  
 ctgaccttc tttttgcctc caaccccaag ctgtaaggaa cgatcgaaac aagaagaaaa 10380  
 aggaggtaaa agaggagggc tcgcccagca gctatgaact gagtccacag ttagaggaaac 10440  
 tcatcaccaa ggtcagcaaa gccaccagc agacttttcc ctactctgc cagctgggca 10500  
 agtacaccac ggtgaggagt gggcagagtg tgggtgaggg cctcaggaac gggcagtggg 10560  
 gagagtgcac aggggaagcct tcacggctca cttcacccct gcagaactcc agtcagatc 10620  
 accgggtgca gctggacctg gggtgtggg acaagttcag cgagctggcc accaaatgca 10680  
 tcatcaagat tgtggagtgt gcgaagcggc tgctgtgttt tacagggtc agcattgccg 10740  
 accagatcac gctgctcaag gctgctgtgc tggacatcct agtgagttag gcagatgagt 10800  
 tctggaccac tctgaccctt tccaccacc accccacca cacccttag ccctctctc 10860  
 cacctaagct cttttgtct tagcagttcc ctctgtgttt gcctaccctc cccttccaa 10920  
 tctcaagagt cccactctc cgccttact ctccagttca ggctttcct actgggaacc 10980  
 aaactcactt aggaatcctt cctcaggagc agtaataacc gttttcctta cccccaccct 11040  
 ccagatgctg cggatctgta caaggtatac cccagagcag gacactatga cattctcgga 11100  
 tgggctgacc ctgaaccgaa cccagatgca caatgctggc tttgggccc ttacagacct 11160  
 cgtctttgcc tttgcggggc agctgctgcc cctggagatg gatgacaccg agactgggct 11220

acttagtgct atctgcctca tctgtggagg tgcggggggcg ccccttggtg tctacatggg 11280  
ctccctctcc caccagactc tatccagacc ctatcccac tctgaccagg tggcaggctc 11340  
tctttttccc tgggaattgt tctacagac ttctcagctt atgtatagtc tttctggcta 11400  
accaggctaa gggaaaaaga aggaggcaga gtccggagaa cgcagaagcc ctggatacag 11460  
tgctgagata ggaatttaat gggagtata ttctagagca gcatcattgc tgaggagtaa 11520  
acacagggcc ttatgtcagg ggagctaacc tggagggcta agtgacagga gtaaagagt 11580  
gatgagatag ctttgaggcc ctccaagtaa ggtctgtcag gcgtcagccg cctgtcactg 11640  
tgctctaccg tgctcatcc aatctccttg tgtagaccga atggacctg aagagccga 11700  
gaaggtggac aagctgcagg agccccgtct ggaagccctg aggtctctatg cccggcgacg 11760  
gagaccagc caacctaca tgttcccaag gatgctgatg aaaatcaccg acctccgggg 11820  
catcagcact aagggttagt tctgagtcaa ctctctctcc ctcccagat ctgcaggctc 11880  
cctgagtcac acaggtggac aggcacaggc agggggagag aggaaccgag aatccagcaa 11940  
cctccatgga gtctggtgt gtgtgtgttt gtgtgtgttg ctggagagg aacctgttac 12000  
catccataaa ctaggcaa atgtatctgac aacctagctt cctttacttt ttatcattta 12060  
tttattttatt atatgtaagt acctgttagc tgtcttcaga cacaccagaa gaaggcatca 12120  
gatctcatta cggatggttg tgagccacca tgtggttgct gggaattgaa tcccgggtc 12180  
gactcgagcg gccgcacgt gactgactga cgatctgcct cgcgcgtttc ggtgatgacg 12240  
gtgaaaacct ctgacacatg cagctcccgg agacgggtcac agcttgtctg taagcggatg 12300  
ccgggagcag acaagcccg cagggcgcgt cagcgggtgt tggcgggtgt cggggcgacg 12360  
ccatgaccca gtcacgtagc gatagcggag gataaattc ttgaagacga aaggccctcg 12420  
tgatacgctt atttttatag gttaatgtca tgataaat ggtttcttag acgtcaggtg 12480  
gcacttttcg gggaaatgtg cgcggaacct ctatttgttt atttttctaa atacattcaa 12540  
atatgtatcc gctcatgaga caataacct gataaatgct tcaataatat tgaaaaagga 12600  
agagtatgag tattcaacat ttccgtgtcg ccttattcc cttttttgcg gcattttgcc 12660  
ttcctgtttt tgctcaccca gaaacgctgg tgaaagtaaa agatgctgaa gatcagttgg 12720  
gtgcacgagt gggttacatc gaactggatc tcaacagcgg taagatcctt gagagttttc 12780  
gccccgaaga acgttttcca atgatgagca cttttaaagt tctgctatgt ggcgcggtat 12840  
tatcccggtg tgacgcggg caagacgaac tcggtcgccg catacactat tctcagaatg 12900  
acttggttga gtactacca gtcacagaaa agcatcttac ggtggcatg acagtaagag 12960  
aattatgcag tgctgccata acctgagtg ataacactgc ggccaactta cttctgacaa 13020  
cgatcggagg accgaaggag ctaaccgctt ttttgcaaaa catgggggat catgtaactc 13080  
gccttgatcg ttgggaaccg gagctgaatg aagccatacc aaacgacgag cgtgacacca 13140  
cgatgcctgc agcaatggca acaacgttgc gaaaactatt aactggcgaa ctacttactc 13200  
tagcttcccg gcaacaatta atagactgga tggaggcgga taaagttgca ggaccacttc 13260  
tgcgctcggc cttccggct ggctggttta ttgctgataa atctggagcc ggtgagcgtg 13320  
ggtctcggcg tatcattgca gcaactatgg atgaacgaaa tagacagatc gctgagatag 13440  
tctacacgac ggggagtcag ggttaactgt cagaccaagt ttactcatat atactttaga 13500  
gtgcctcact gattaagcat taatttaaaa ggtcttaggt gaagatcctt tttgataatc 13560  
ttgatttaaa acttcatttt cgtgagtttt cgttccactg agcgtcagac cccgtagaaa 13620  
tcatgaccaa aatcccttaa gatccttttt ttctgcgcgt aatctgctgc ttgcaaaaa 13680  
agatcaaagg atcttcttga gtggtttgtt tgccggatca agagctacca actctttttc 13740  
aaaaaccacc gctaccagcg agagcgcaga taccaaatac tgtccttcta gtgtagccgt 13800  
cgaaggtaac tggcttcagc aactctgtag caccgcctac atacctcgt ctgctaattc 13860  
agttaggcca ccacttcaag agtggcgata agtcgtgtct taccgggttg gactcaagac 13920  
tgttaccagt ggctgctgcc cagcggtcgg gctgaacggg ggggttcgtgc acacagccca 13980  
gatagttacc ggataaggcg accgaactga gatacctaca gcgtgagcta tgagaaagcg 14040  
gcttgaggcg aacgacctac aaggcggaga ggtatccggg aagcggcagg gtcggaacag 14100  
ccacgcttcc cgaagggaga ccaggggga acgcctggta tctttatagt cctgtcgggt 14160  
gagagcgac gagggagctt cgtcgatttt tgtgatgctc gtcagggggg cggagcctat 14220  
ttcgccacct ctgacttgag gcctttttac ggttcctggc cttttgctgg cttttgtctc 14280  
ggaaaaacgc cagcaacgcg tcccctgatt ctgtggataa ccgtattacc gcctttgagt 14340  
acatgttctt cctgcgtta agccgaacga ccgagcgcag cgagtcatg agcgaggaag 14400  
gagctgatac cctgatgcgg tattttctcc ttacgcactc gtgcggtatt tcacaccgca 14460  
cggaagagcg caccatcgaa tggcgcaaaa cctttcgcgg tatggcatga tagcggcccg 14520  
taaattccga attcagggtg gtgaatgtga aaccgtaac gttatacga gtcgcagagt 14580  
aagagagtca atcttatcag accgtttccc gcgtggtgaa ccaggccagc cacgtttctg 14640  
atgccgggtg ctcttatcag gaagcggcga tggcggagct gaattacatt cccaaccgag 14700  
cgaaaaacgc ggaaaaagtg

tggcacaaca actggcgggc aaacagtcgt tgctgattgg cgttgccacc tccagctctgg 14760  
 ccctgcacgc gccgtcgcaa attgtcgcgg cgattaaatc tcgcgccgat caactgggtg 14820  
 ccagcgtggg ggtgtcgatg gtagaacgaa gcggcgctga agcctgtaaa gcggcggtgc 14880  
 acaatcttct cgcgcaacgc gtcagtgggc tgatcattaa ctatccgctg gatgaccagg 14940  
 atgccattgc tgtggaagct gcctgcacta atgttccggc gttatttctt gatgtctctg 15000  
 accagacacc catcaacagt attattttct cccatgaaga cggtagcgga ctgggcgtgg 15060  
 agcatctggg cgcattgggt caccagcaaa tcgcgctggt agcggggcca ttaagtctctg 15120  
 tctcggcgcg tctgcgtctg gctggctggc ataaatatct cactcgcaat caaattcagc 15180  
 cgatagcggg acgggaaggg gactggagtg ccatgtccgg ttttcaacaa accatgcaaa 15240  
 tgctgaatga gggcatcggt cccactgcga tgctggttgc caacgatcag atggcgctgg 15300  
 gcgcaatgcg cgccattacc gagtccgggc tgcgcgttgg tgcggatata tcggtagtgg 15360  
 gatacgagca taccgaagac agctcatggt atatcccgcc gttaaccacc atcaaacagg 15420  
 attttcgcct gctggggcaa accagcgtgg accgcttgct gcaactctct cagggccagg 15480  
 cgggtgaaggg caatcagctg ttgcccgtct cactggtgaa aagaaaaacc accctggcgc 15540  
 ccaatacgca aaccgcctct ccccgcgctg tggccgattc attaatgcag ctggcacgac 15600  
 aggtttcccg actggaaagc gggcagtgag cgcaacgcaa ttaatgtgag ttagctcact 15660  
 cattaggcac cccaggcttt acactttatg cttccggctc gtatgttgtg tggaattgtg 15720  
 agcggataac aatttcacac aggaacacgc tatgaccatg attacggatt cactggccgt 15780  
 cgttttacaa cgtcgtgact gggaaaaccc tggcgttacc caacttaatc gccttgacgc 15840  
 acatccccct ttcgccagct ggcgtaatag cgaagaggcc cgcaccgatc gcccttccca 15900  
 acagtgcgc agcctgaatg gcgaatggcg ctttgcctgg tttccggcac cagaagcggg 15960  
 gccgaaaagc tggctggagt gcgatcttcc tgaggccgat actgtcgtcg tcccccaaa 16020  
 ctggcagatg cacggttacg atgcgcccac ctacaccaac gtaacctatc ccattacggt 16080  
 caatccgcg tttgttccca cggagaatcc gacgggttgt tactcgtca catttaatgt 16140  
 tgatgaaagc tggctacagg aaggccagac gcgaattatt tttgatggcg ttggaattac 16200  
 gttatcgact gcacggtgca ccaatgcttc tggcgtcagg cagccatcgg aagctgtggt 16260  
 atggctgtgc aggtcgtaaa tcaactgcata attcgtgtcg ctcaaggcgc actcccgctc 16320  
 tggataatgt tttttgcgcc gacatcataa cggttctggc aaatattctg aaatgagctg 16380  
 ttgacaatta atcatcggct cgtataatgt gtggaattgt gagcggataa caatttcaca 16440  
 caggaaacag tattcatgtc cctatacta ggttattgga aaattaaggg ccttgtgcaa 16500  
 cccactcgac ttcttttggg atatcttgaa gaaaaatatg aagagcattt gtatgagcgc 16560  
 gatgaaggtg ataaatggcg aaacaaaaag tttgaattgg gtttgaggtt tcccaatctt 16620  
 ccttattata ttgatgggta tgttaaatga acacagtcta tggccatcat acgttatata 16680  
 gctgacaagc acaacatggt ggggtggtgt ccaaaagagc gtgcagagat ttcaatgctt 16740  
 gaaggagcgg ttttgatgat tagatacggg gtttcgagaa ttgcatatag taaagacttt 16800  
 gaaactctca aagttgatgt tcttagcaag ctacctgaaa tgctgaaaat gttcgaagat 16860  
 cgtttatgtc ataaaacata tttaaatggt gatcatgtaa cccatcctga cttcatgttg 16920  
 tatgacgctc ttgatgttgt tttatacatg gacccaatgt gcctggatgc gttcccaaaa 16980  
 ttagtttgtt ttaaaaaacg tattgaagct atcccacaaa ttgataagta cttgaaatcc 17040  
 agcaagtata tagcatggcc tttgcagggc tggcaagcca cgtttggtgg tggcgaccat 17100  
 cctccaaaat cggatctggt tccgcgtgga tcccc 17135

<210> 56

<211> 8934

<212> DNA

<213> Artificial sequence

<220>

<223> Description of Artificial sequence: DNA  
sequence of plasmid pJMG

<220>

<223> Position 1 to 2240 vector sequence

<220>

<223> Position 2245 Frt site, sense

TOP SECRET



<223> Position 2285 loxP1 site, sense

<223> Position 2355 lox511 site, sense

<223> Position 2400 to 5952 NLS-LacZ polyA gene,  
antisense

<223> Position 5960 to 6549 IRES, antisense

<223> Position 6550 to 7050 rabbit beta globin intron,  
antisense

<223> Position 7060 loxP1 site, antisense

<223> Position 7115 to 7630 PGK promotor, sense

<223> Position 7638 to 8840 Neomycine resistance gene,  
sense

<223> Position 8441 to 8480 synthetic splice donor site,  
sense

<223> Position 8505 lox511 site, antisense

<223> Position 8540 Frtm site, antisense

<223> Position 8600 to 8934 vector sequence

gtggcacttt	tcggggaaat	gtgcgcggaa	ccctattttg	tttatttttc	taaatacatt	60
caaatatgta	tccgctcatg	agacaataac	cctgataaat	gcttcaataa	tattgaaaaa	120
ggaagagtat	gagtattcaa	catttcctgt	tgcgccctat	tccctttttt	gcggcatttt	180
gccttcctgt	ttttgctcac	ccagaaaacgc	tggtgaaagt	aaaagatgct	gaagatcagt	240
tgggtgcacg	agtgggttac	atcgaactgg	atctcaacag	cggtaaagatc	cttgagagtt	300
ttcgcccccg	agaacgtttt	ccaatgatga	gcacttttaa	agttctgcta	tgtggcgcgg	360
tattatcccc	tattgacgcc	gggcaagagc	aactcggctc	ccgcatacac	tattctcaga	420
atgacttggt	tgagtactca	ccagtcacag	aaaagcatct	tacggatggc	atgacagtaa	480
gagaattatg	cagtgtctgc	ataaccatga	gtgataacac	tgcggccaac	ttactctgta	540
caacgatcgg	aggaccgaag	gagctaaccg	cttttttgca	caacatgggg	gatcatgtaa	600
ctcgccctga	tcgttgggaa	ccggagctga	atgaagccat	accaaacgac	gagcgtgaca	660
ccacgatgcc	tgtagcaatg	gcaacaacgt	tgcgcaaact	attaactggc	gaactactta	720
ctctagcttc	cgggcaacaa	ttaatagact	ggatggaggc	ggataaagtt	gcaggaccac	780
ttctgcgctc	ggccctttccg	gctggctggt	ttattgctga	taaatctgga	gccggtgagc	840
gtgggtctcg	cggtatcatt	gcagcatcgg	ggccagatgg	taagccctcc	cgtatcgtag	900
ttatctacac	gacggggagt	caggcaacta	tggatgaacg	aaatagacag	atcgtctgaa	960
taggtgcctc	actgattaag	cattggtaac	tgtcagacca	agtttactca	tatatacttt	1020

agattgattt aaaacttcat ttttaattta aaaggatcta ggtgaagatc ctttttgata 1080  
 atctcatgac caaaatccct taacgtgagt tttcgttcca ctgagcgtca gaccccgtag 1140  
 aaaagatcaa aggatcttct tgagatcctt tttttctgcg cgtaatctgc tgcttgcaaa 1200  
 caaaaaaacc accgctacca gcggtggttt gtttgccgga tcaagagcta ccaactcttt 1260  
 ttccgaagggt aactggcttc agcagagcgc agataccaaa tactgtcctt ctagtgtagc 1320  
 cgtagttagg ccaccacttc aagaactctg tagcaccgcc tacatacctc gctctgctaa 1380  
 tctgttacc agtggctgct gccagtggcg ataagtcgtg tcttaccggg ttggactcaa 1440  
 gacgatagtt accggataag gcgcagcggg cgggctgaac ggggggttcg tgcacacagc 1500  
 ccagcttgga gcgaacgacc tacaccgaac tgagatacct acagcgtgag ctatgagaaa 1560  
 gcgccacgct tcccgaaggg agaaaggcgc acaggtatcc ggtaagcggc agggctcgaa 1620  
 caggagagcg cacgaggag cttccagggg gaaacgcctg gtatctttat agtccgtgcg 1680  
 ggtttcgcca cctctgactt gagcgtcgat ttttgtgatg ctcgtcaggg gggcggagcc 1740  
 tatggaaaaa cgccagcaac gcggcctttt tacggttcct ggctttttgc tggccttttg 1800  
 ctccatggtt ctttctgctg ttatccctg attctgtgga taaccgtatt accgcctttg 1860  
 agtgagctga taccgctcgc cgcagccgaa cgaccgagcg cagcgagtca gtgagcgagg 1920  
 aagcgggaaga gcgcccaata cgcaaaccgc ctctccccgc gcgttgcccg attcattaat 1980  
 gcagctggga cgacagggtt cccgactgga aagcgggcag tgagcgcaac gcaattaatg 2040  
 tgagttagct cactcattag gcacccagg ctttacactt tatgcttccg gctcgtagt 2100  
 tgtgtggaat tgtgagcga taacaatttc acacaggaaa cagctatgac catgattacg 2160  
 ccaagcgcgc aattaaccct cactaaaggg cctattctct agaaagtata ggaacttcca 2280  
 gccgctctac gaggaattca accagaagtt cctattctct aagcatcacc atatgcaaat 2340  
 gctcataact tcgtataatg tatgtataac gaagttatcc aagagttata agctctagtt 2400  
 gcctaccgga ccatacataac ttctgataat gtatactata cgaagttata agctctagtt 2460  
 ctagtagaca tgataagata cattgatgag tttggacaaa ccacaactag aatgcagtga 2520  
 aaaaaatgct ttatttgtga aatttgtgat gctattgctt tatttgtaac cattataagc 2580  
 tgcaataaac aagttccgag tttgtcagaa agcagaccaa acagcggttg gaataatagc 2640  
 gagaacagag aaatagcggc aaaaataata cccgtatcac ttttgcgtgat atgggtgatg 2700  
 tcatgtagcc aaatcgggaa aaagcttctg taggctccca tgataaaaaa gtaaaagaaa 2760  
 aagaataaac cgaacatcca tggcctgccc ggttattatt atttttgaca ccagaccaac 2820  
 acgcgaaata cgggcagaca gctcagctgg aattccgcgc atactgacgg gctccaggag 2880  
 tggtaatggt agcagccggc atggaaaccg tcgatattca gccatgtgcc ttcttcgcgc 2940  
 tcgtcgccac caatcccat atggaaaccg agttgctgtt gactgtagcg gctgatgttg 3000  
 tgcagcagat ggcgatggct ggtttccatc ccataattca attcgcgcgt cccgcagcgc 3060  
 aactggaagt cgccgcgcca ctggtgtggg gtatacatgt ctgacaatgg cagatcccag 3120  
 agaccgtttt cgctcgggaa gaggtacggg ggatagtttt cttgcggccc taatccgagc 3180  
 cgggtcaaac agggcgagc gctctgctac ctgcgccagc tggcagttca ggccaatccg cgccggatgc 3240  
 cagtttaccg gctctgctac aacatcaacg gtaatcgcca tttgaccact accatcaatc 3300  
 ggtgtatcgc tcgccacttc aaataagggt ttcccttgat gctgccacgc gtgagcggtc 3360  
 cggtaggttt tccggctgat aagtgatct gcctgcaact gcaacaacgc tgcttcggcc 3420  
 gtaatcagca ccgcatcagc ccagcgttcg acccaggcgt tagggccaat gcgggtcgct 3480  
 tggtaatggc ccgcccgtt atccagcggg gcacgggtga actgatcgcg cagcggcgctc 3540  
 tcacttacgc caatgtcgtt aatccacatc tgtgaaagaa agcctgactg gcggttaaat 3600  
 agcagttggt ttttatcgcc ctcgatgcaa aaatccattt cgctgggtgg cagatgcggg 3660  
 tgccaacgct tattaccag acgcggcggg gagcgtcaca ctgaggtttt ccgccagacg ccactgctgc 3720  
 atggcgtggg aggcggcggg tctgacctt gcggtcgcgt tcggttgac tacgcgtact 3780  
 caggcgtga tgtgccggc gctctccggc cagcagttc caggcagttc aatcaactgt 3840  
 gtgagccaga gttgccggc cagaggcact tcaccgctt ccagcggctt accatccagc 3900  
 ttacctgtg gagcgacatc ctctgtatcg ctatgacgga acaggtattc gctggctact 3960  
 gccaccatcc agtgaggag gccgggataa acggaactgg aaaaactgct gctgggtgtt tgcttcgcgc 4020  
 tcgatgggtt gccgggataa gtcgggcaaag accagaccgt tcatacagaa ctggcgatcg 4080  
 agcgtgggat gcggaataat accgcgctaa gccgaccag cctgtaaacc gggataactga 4200  
 ttaatcagcg actgatccac gcaaacgctt agcgaacggc ccaagactgt taccatcgc gtgggcgtat 4260  
 cgaaacgctt gcaagtggt cgtctctcca ggtagcgaag gccatttttt gatggaccat 4320  
 tcgcaaaagg ccgggaaggg ctggtcttca tccacgcgcg cgtacatcgg gcaaataata 4380  
 ttcggcacag ccgggaaggg tccgcgcgct tcatactgca ccgggcggga aggatcgaca 4440  
 tcggtggcgc agcgatacag cgcgtcgtga ttagcgccgt ggcctgattc attcccagc 4500

gaccagatga tcacactcgg gtgattacga tcgcgctgca ccattcgcgt tacgcgttcg 4560  
ctcatcgccg gtagccagcg cggatcatcg gtcagacgat tcattggcac catgccgtgg 4620  
gtttcaatat tggcttcac caccacatac aggcgcgtagc ggtcgcacag cgtgtaccac 4680  
agcggatggt tcggataatg cgaacagcgc acggcggttaa agttgttctg cttcatcagc 4740  
aggatatcct gcaccatcgt ctgctcatcc atgacctgac catgcagagg atgatgctcg 4800  
tgacgggttaa cgctcgaat cagcaacggc ttgcccgttca gcagcagcag accattttca 4860  
atccgcacct cgcggaaacc gacatcgag gcttctgctt caatcagcgt gccgtcggcg 4920  
gtgtgcagtt caaccaccgc acgatagaga ttccgggattt cggcgctcca cagtttcggg 4980  
ttttcgacgt tcagacgtag tgtgacgcga tcggcataac caccacgctc atcgataatt 5040  
tcaccgccga aaggcgcggt gccgctggcg acctgcgttt caccctgccca taaagaaact 5100  
gttaccgcga ggtagtcacg caactcgccg cacatctgaa cttcagcctc cagtacagcg 5160  
cggctgaaat catcattaaa gcgagtggca acatggaaat cgctgatttg ttagtcggt 5220  
ttatgcagca acgagacgtc acggaaaatg ccgctcatcc gccacatac ctgatcttcc 5280  
agataaactgc cgtcactcca acgcagcacc atcaccgcga ggcgggtttc tccggcgcg 5340  
aaaaatgccc tcaggtcaaa ttacagcggc aaacgactgt cctggccgta accgaccag 5400  
cgcccggtgc accacagatg aaacgcggag ttaacgccat caaaaataat tcgcgtctgg 5460  
ccttcctgta gccagctttc atcaacatta aatgtgagcg agtaacaacc cgtcggattc 5520  
tccgtgggaa caaacggcg attgaccgta atgggatagg ttacgttggg tagatgggc 5580  
gcatcgtaac cgtgcatctg ccagttttag gggacgcga cagtatcggc ctcaggaaga 5640  
tcgcactcca gccagctttc cggcaccgct tctggtgcgg gaaaccaggc aaagcgccat 5700  
tcgccattca ggtgcgcaaa ctggtgggaa gggcgatcgg tgcgggcctc ttcgctatta 5760  
cgccagctgg cgaaaagggg atgtgctgca aggcgattaa gttgggtaac gccagggttt 5820  
tcccagtcac gacgttgtaa aacgacggcc agtgccaagc ttggactcaa aaaacttagc 5880  
aattctgaag gaaagtcctt ggggtcttct acctttctct tcttttttgc ggaattccgg 5940  
aaaactttat ccatggttgt ggctagctta tcattgtgtt tttcaaagga aaaccacgct 6000  
cccgtggttc ggggggccta gacgtttttt taacctcgac taaacacatg taaagcatgt 6060  
gcaccgaggg ccagatcag atcccataca atggggatcc ttctgggcat cttcagccc 6120  
cttgttgaat acgcttgagg agagccattt gactctttcc acaactatcc aactcacaac 6180  
gtggcactgg ggtgtgccc cctttgcagg tgtatcttat acacgtggct tttggccgca 6240  
gaggcacctg tcgcccaggtg ggggggttccg ctgcctgcaa agggctcgta cagacgttgt 6300  
ttgtcttcaa gaagcttcca gaggaactgc ttcttccag acattcaaca gaccttgc 6360  
tcctttggcg agaggggaaa gacccttagg aatgctcgtc aagaagacag ggccagggtt 6420  
ccgggccctc acattgcaa aagacggcaa tatggtggaa aataacatat agacaaacgc 6480  
acaccggcct tattccaagc ggcttcggcc agtaacgtta gggggggggg agggagagg 6540  
gggaattcc ctatagttag gctgattaca attctttgcc aaaatgatga gacagcaca 6600  
taaccagcac gttgccagg agctgttaga aaaagaagaa ggcattgaaca tggtagcag 6660  
aggggacctg tttggactca gattatttta tctcatctc aaacagtgt tatcattgta 6720  
accataaaga gaaagcgagg atgatgacca ggtgttagtt gtttctacca ataagaatat 6780  
ttccacgcca gccagaattt atatgcagaa atattctacc ttatcattta attataacaa 6840  
ttgttctcta aaactgtgct gaagtacaat ataataatcc ctgattgcct tgaaaaaaa 6900  
gtgattagag aaagtactta caatctgaca aataaaca aaagtaattta aaaattcgtt 6960  
acaaatgcaa gctaaaagttt aacgaaaaag ttacagaaaa tgaaaagaaa ataagaggag 7020  
acaatggttg tcaacagagt gcaaattcca ggccaaggaa taacttcgta tagcatacat 7080  
tatacgaagt tatgcggccg atccccgggc tgcaggaatt ctaccgggta ggggagggc 7140  
ttttccaaag cgactctgga gcatgcgct tagcagcccc gctgggcact tggcgctaca 7200  
caagtggcct ctggcctcgc acacattcca catccaccgg taggcgccaa ccggctccgt 7260  
tctttggttg ccccttcgcg ccaccttcta ctctccct agtcaggaag ttccccccg 7320  
ccccgcagct cgcgtcgtgc aggacgtgac aaatgggaag agcacgtctc actagtctcg 7380  
tgcagatgga cagaccgct gagcaatgga agcgggtagg cctttggggc agcgccaat 7440  
agcagctttg ctcttcgct ttctgggctc agaggctggg aaggggtggg tccggggcg 7500  
ggctcagggg cgggctcagg ggcgggggcg gcgccgaag gtcttcgga gccggcatt 7560  
ctgcacgctt caaaaagcga cgtctgcgc gctgttctcc tcttctcat ctccgggctc 7620  
ttcgacctgc agccaatat ggatcggcca ttgactggga tggattgcac gcaggtctc 7680  
cggccgcttg ggtggagagg ctattcggct atgactgggc acaacagaca atcggtcgt 7740  
ctgatgccgc cgtgttccgg ctgtcagcgc aggggcgccc ggttctttt gtcaagaccg 7800  
acctgtccgg tgcctgaat gaactgcagg acgaggcagc gcggctatcg tggctggcca 7860  
cgacgggcgt tccttgcgca gctgtgctcg acgtgtcac tgaagcggga agggactggc 7920  
tgctattggg cgaagtgcgg gggcaggatc tcctgtcatc tcacctgct cctgccgaga 7980

aagtatccat	catggctgat	gcaatgcggc	ggctgcatac	gcttgatccg	gctacctgcc	8040
cattcgacca	ccaagcgaaa	catcgcatcg	agcgagcacg	tactcggatg	gaagccggtc	8100
ttgtcgatca	ggatgatctg	gacgaagagc	atcaggggct	cgcgccagcc	gaactgttcg	8160
ccaggctcaa	ggcgcgcgatg	cccgcgcggc	aggatctcgt	cgtgacccat	ggcgaatgct	8220
gcttgccgaa	tatcatgggtg	gaaaatggcc	gcttttctgg	attcatcgac	tgtggccggc	8280
tgggtgtggc	ggaccgctat	caggacatag	cgttggttac	ccgtgatatt	gctgaagagc	8340
ttggcggcga	atgggctgac	cgcttcctcg	tgttttacgg	tatcgccgct	cccgaattcg	8400
agcgcatcgc	cttctatcgc	cttcttgacg	agttcttctg	actgtaaaac	gacggccagt	8460
caggtaagtc	tcgagcgggc	gatataaagc	ttatcgatac	cggataaact	tcgtatagta	8520
tacattatac	gaagttatga	gaagttccta	atctatttga	agtataggaa	cttcgcggcc	8580
gcatcgacct	cgaggggggg	cccgggcctt	ccccgtcaag	ctctaaatcg	ggggctccct	8640
ttagggttcc	gatttagtgc	tttacggcac	ctcgacccca	aaaaacttga	ttagggatg	8700
ggttcacgta	gtgggccatc	gccctgatag	acggtttttc	gccctttgac	gttgaggtcc	8760
acgttcttta	atagtggtg	cttggtccaa	actggaacaa	cactcaaccc	tatctcggtc	8820
tattcttttg	atttataagg	gattttgccg	atttcggcct	attgggttaa	aaatgagctg	8880
atttaacaaa	aatttaacgc	gaattttaac	aaaatattaa	cgcttacaat	ttag	8934

054450.03401